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Streamflow Records for the Niobrara River at Agate, Nebraska. 1995-2004 Station 06454100

August 2004

Prepared by: Larry Martin National Park Service Water Resources Division 1201 Oakridge Drive, Suite 250 Ft. Collins, CO 80525 (970)-225-3515



National Park Service - Department of the Interior Fort Collins - Denver - Washington

> NATIONAL PARK SERVICE WATER RESOURCES DIVISION FORT COLLINS, COLORADO RESOURCE ROOM PROPERTY

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The USGS operated a streamflow gaging station on the Niobrara River just upstream of the Highway 29 bridge from 1957-91 (Station Number 06454100). Data for the period when USGS operated the gaging station are available from http://nwis.waterdata.usgs.gov/ne/nwis/discharge. Select the box for "site number" and enter "06454100". This will provide access to the historical data collected by USGS from 1957-91.

National Park Service staff at Agate Fossil Beds National Monument have operated the chart recorder at the site since 1995. The record since 1995 is not continuous because there were many times when the recorder was not functioning properly.

The charts from the recorder for the period from 1995-2004 were analyzed and average daily streamflow values were computed for periods when the chart recorder was operating. Charts were analyzed to determine the average stage of the stream for a particular day. The values for date and stage were entered in an Excel spreadsheet. The stage data were converted to average daily streamflow by applying a regression equation that was developed from the rating curve for the site. The rating curve and regression equation are included in this report. The data were then put in tabular format by water year, similar to the standard USGS format for publishing hydrographic data. These tables and a hydrograph for each year are included in this report.

In FY-03, the USGS was contracted to conduct streamflow gaging at this site to evaluate the stage-discharge rating curve for the site. USGS also conducted repair and maintenance of the chart recorder and associated equipment to make certain that it was in good operating condition. Data collected in 2002-03 are shown on a figure in this report along with the rating curve that was used prior to 1991. The data from 2003-03 show that the rating curve is still a fairly reliable tool for converting stage (water level) in the stream to flow rates.

Nebraska DNR is interested in operating a gaging station at this site to assist in their administration of water rights on the Niobrara River. DNR is willing to operate the gaging station and publish the data in their annual "Hydrographer's Report" if NPS would provide funding for the initial purchase of digital recording equipment for the site. The digital recording equipment has been purchased and is in storage at the park. It will be installed after agreements for operation of the gaging station have been negotiated between the NPS, Nebraska DNR, and the landowner.

The data analysis and preparation of this report was by Larry Martin, NPS-Water Resources Division, Ft. Collins, CO. Lil Morava at Agate Fossil Beds operated the chart recorder and collected the field data. Dan Hitch, USGS, made the streamflow measurements in 2002-03.



Hydrographs

Hydrographs

1/1/04 1/1/03 12/31/01 12/31/00 1/1/00 12/31/97 12/31/96 1/1/96 1/1/95 50 40 30 10 20 Streamflow, cfs

Niobrara River at Agate, Nebraska February 1995 to June 2004



10/01/95 07/01/95 04/01/95 12/31/94 10/01/94 Average Daily Flow, CFS 20 40 10

Niobrara River at Agate, Nebraska October 1994 - September 1995

96/08/60 96/08/90 03/31/96 12/31/95 10/01/95 40 10 20 30 20 Average Daily Flow, CFS

Niobrara River at Agate, Nebraska October 1995 - September 1996



Niobrara River at Agate, Nebraska October 1996 - September 1997

10/01/97 07/01/97 04/01/97 12/31/96 10/01/96 20 40 10 30 20 Average Daily Flow, CFS



10/01/98 07/01/98 04/01/98 12/31/97 10/01/97 20 40 10 30 20 Average Daily Flow, CFS

Niobrara River at Agate, Nebraska October 1997 - September 1998



10/01/99 07/01/99 04/01/99 12/31/98 10/01/98 20 40 10 20 30 Average Daily Flow, CFS

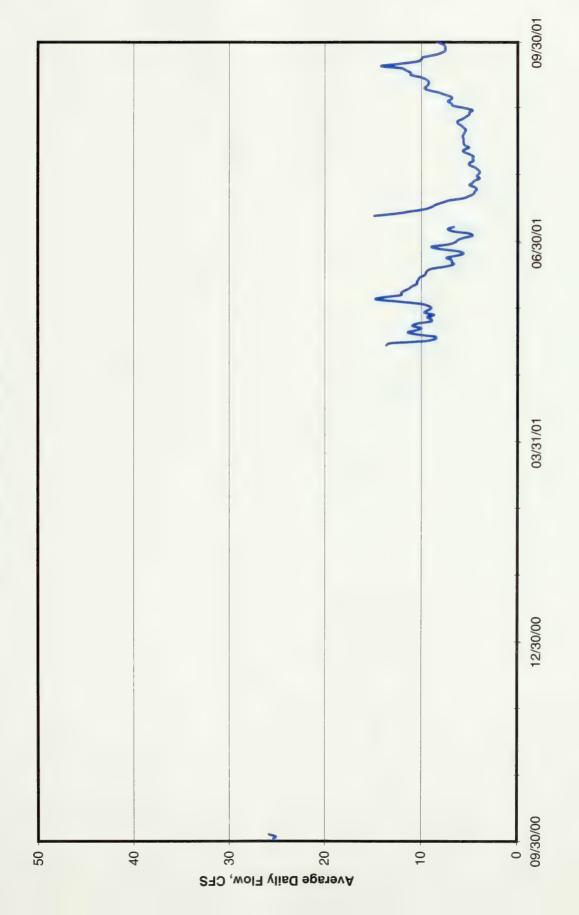
Niobrara River at Agate, Nebraska October 1998 - September 1999

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Niobrara River at Agate, Nebraska October 1999 - September 2000

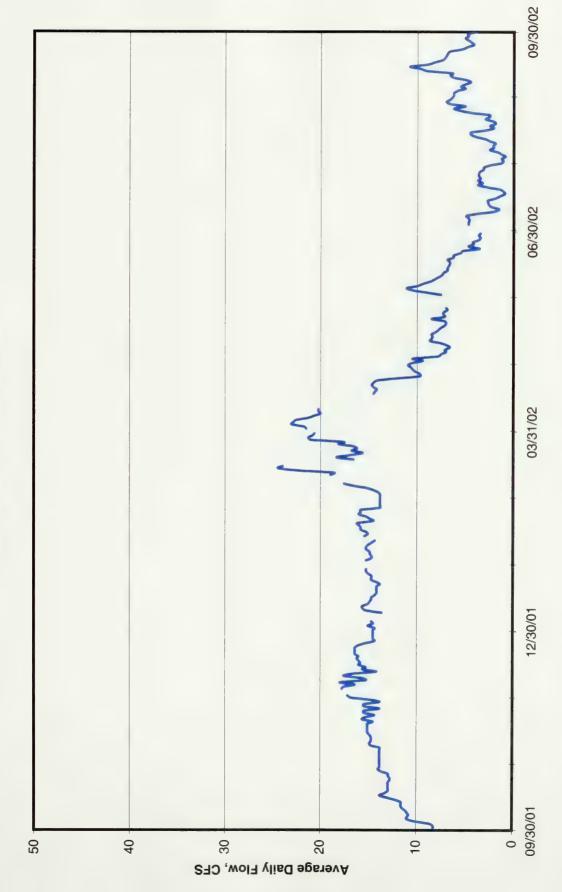


Niobrara River at Agate, Nebraska October 2000 - September 2001





Niobrara River at Agate, Nebraska October 2001 - September 2002



10/01/03 07/01/03 04/01/03 12/31/02 10/01/02 50 40 Average Daily Flow, CFS 10

Niobrara River at Agate, Nebraska October 2002 - September 2003



09/30/04 06/30/04 03/31/04 12/31/03 10/01/03 40 Average Daily Flow, CFS 10 20

Niobrara River at Agate, Nebraska October 2003 - September 2004



Data Tables

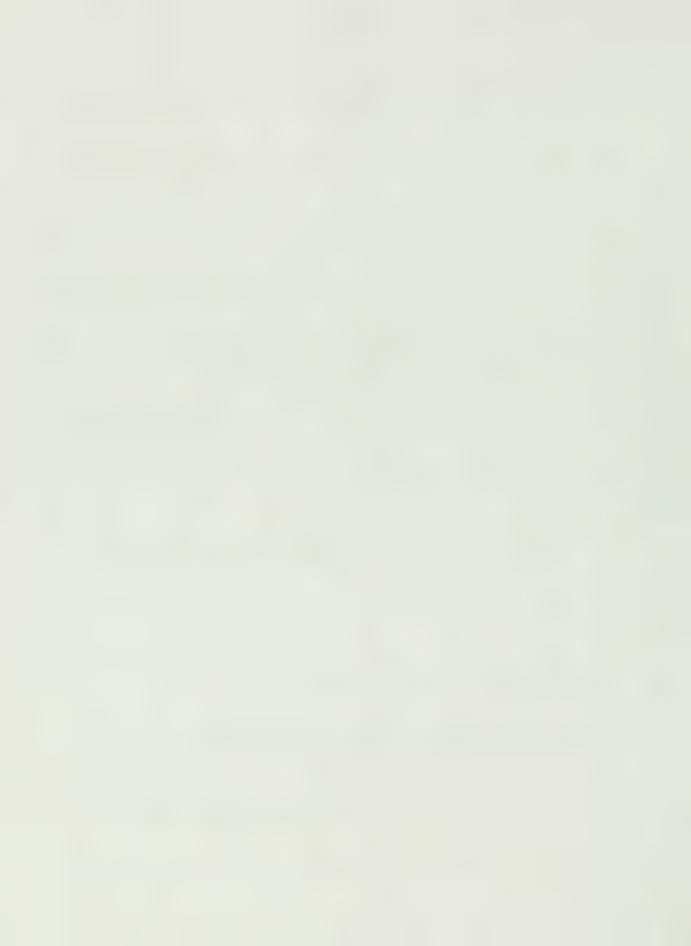


		Disch	arge, Cubic	Feet per Se	econd. Wate	Discharge, Cubic Feet per Second, Water Year October 1994 through September 1995	ber 1994 th	Feet per Second. Water Year October 1994 through Sept	ember 1995			
					Daily	Daily Mean Values						
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
-					- + -	18.2	13.4	8.7	25.4	11.6	8.1	9.7
2						18.2	13.1	8.4	22.8	11.3	8.2	
n						18.6	12.9	9.3	20.4	10.5	8.8	
4						18.2	12.6	8.8	21.7	10.8	9.4	
2					-	16.4	11.1	8.5	24.0	10.5	8.5	National Maries
9					20.4	19.0	10.6	4.6	24.4	9.7	8.2	
7					18.6	18.8	10.6	12.8	21.7	0.6	8.7	
∞					18.0	18.6	11.4	20.6	20.2	9.3	9.3	
50					17.0	16.6	12.4	22.4	22.8	8.2	9.7	
10					14.7	16.2	11.8	20.0	28.8	8.5	9.7	
17					14.3	16.2	12.6	20.4	28.8	8.4	10.0	
12.					14.3	17.4	12.9	21.7	25.6	8.5	10.5	
13					14.2	18.2	13.3	21.9	24.4	8.5	10.9	
14					14.2	18.0	12.6	20.9	23.1	8.4	11.3	
15					14.2	16.8	12.6	19.0	21.1	8.7	11.3	1
16					12.9	15.8	13.3	18.6	20.2	8.5	11.3	
17					12.6	15.8	13.3	18.2	18.0	8.2	11.3	
9					13.8	16.0	13.3	17.4	16.8	8.2	9.0	
19					16.6	16.0	13.1	18.2	15.8	8.2	10.8	
20.					19.2	16.0	13.1	21.1	15.1	8.5	10.9	
21					17.8	15.8	13.3	21.3	14.3	8.5	10.6	
22					18.2	15.4	13.1	18.6	14.0	8.1	10.5	
23					18.2	14.9	9.7	22.8	13.8	8.0	10.9	
24					18.6	14.7	8.5	24.7	13.6	8.1	10.9	
25					18.6	14.5	8.4	22.6	12.9	8.1	10.9	
26					18.2	13.8	8.2	24.0	12.2	8.1	10.5	
27					18.0	10.9	8.8	26.3	11.4	8.5	10.5	
28					18.2	10.5	8.1	29.3	12.9	8.7	10.5	
29						10.5	8.1	27.3	13.3	9.0	10.2	
30						13.8	8.7	26.1	12.8	9.4	10.3	- Allen
31		_				14.2			1	00	10.5	

		Dischar	Discharge, Cubic Feet per Second, Water Year October 1995 through September 1996	er Second	d, Water Yea	r October 1	Cubic Feet per Second, Water Year October 1995 through	September 1	1996	1 1	
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9						1	12.8	15.1		+	
7					The state of the s		12.9	14.7	1		,
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10							14.3	11.4		ř	
11					2.0	-	14.0	10.9	1		
12							13.8	10.9			
13							13.3	12.6	1	1	
14				-			12.8	12.1			Page 1
15							11.3	12.4	-		
16							9.0	11.3	÷	•	
17					, ,		9.3	10.9	r		
18					-	1	11.3	10.8	·		
19							11.3	10.2	<u>-</u>	-	
20					+	1	10.5	0.6			
21				,		-	10.0	8.2	*	-	
22				The state of the s	1	15.6	11.3		,		
23					†	15.1	14.0	-	Ŧ		
24					† —	14.5	14.7	-			
25						14.2	14.7	† - !	1	Ť	
26						13.8	21.7	1	4	•	
27						14.2	27.5		Ī	, -	
28					1	12.1	24.0		1	-	
29						14.2	24.0	;	1		
30					,	13.4	23.1	1	r 1	1	
31							21.7				1



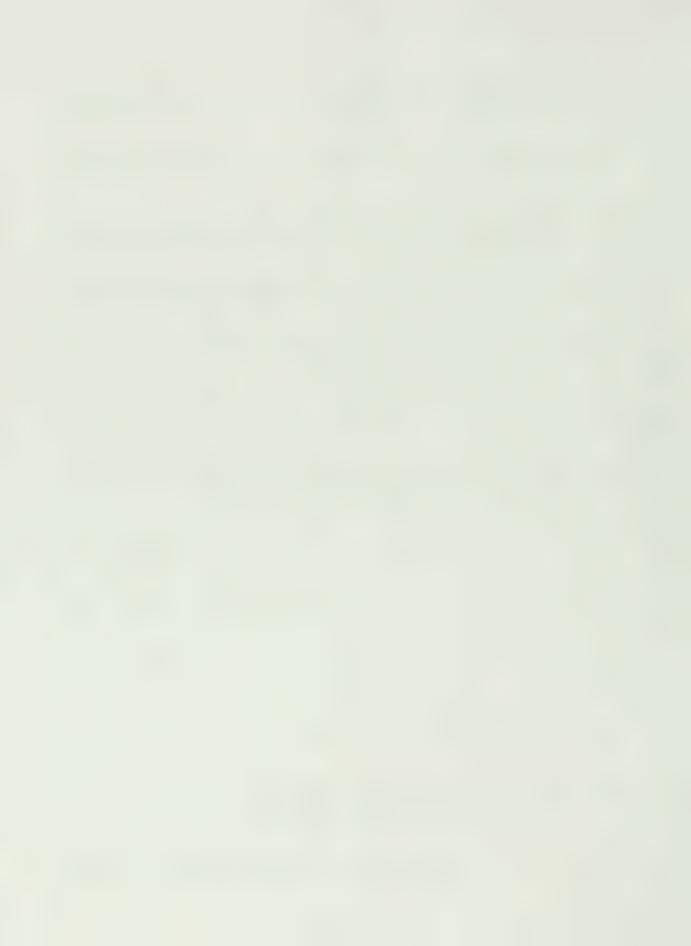
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			Discharge, C	Subic Feet	ge, Cubic Feet per Second, Water Year October 1996 through September 1997	Nater Year	October 19	996 through	September	1997		
					SO	Daily Mean Values	alnes					
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	_	11.1	13.8			-		17.2		1.7	5.0	0.0
	2	11.3	13.3					11.6		1.7	4.3	6.0
	3	11.3	12.6			•		10.6		1.8	3.2	0.8
	4	10.9	13.3					10.6		2.1	2.6	4.1
	5	10.8	13.8					10.6		2.0	2.0	1.6
	9	10.8	13.4			1		10.5		2.0	1.7	3.0
	7	10.6	13.3					9.7		1.7	1.5	1.9
	0	10.5	13.8			-		8.2	1	1.3	1.4	1.8
	6	10.8	14.7					8.4	:	1.2	1.4	2.5
_	0	11.1	14.7					8.4			2.2	2.5
-		11.6	15.3					8.2	1	1.2	2.2	2.3
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	3	11.6	14.7			_		8.0	3.2	-	2.7	0.9
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		14.7			17.0			7.1	2.4	1		0.7
	9. 9.4	15.6			19.0			7.1	1.8	1	2.1	1.1
2		16.4			19.0		1 -	6.8	1.5	Ι.	1 .80	1.6
2	21 9.5	15.6	_		18.6			7.3	1.5	÷	1.7	1.7
2		15.6			17.6		27.0		1.4		1.8	2.1
2		14.7			20.6		24.4	1	1.5	4	1.6	4.0
2		14.7			19.8	1	21.9	-	2.2	t I	1.6	4.5
2		13.8			21.7		21.1	} 	2.2	, -	<u>دن</u>	2.8
2	0.01	13.8			18.4		19.6	1	1.7	1 i	6.0	1.8
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2	28 9.9	14.7			16.8		17.6		2.1		6.0	1.2
2	10	14.7					18.4		2.8		1.1	+-
3	11.1	12.9					18.2		2.0		1.4	1.0
8	11.6									3.0	1.3	



				Discharge, C	Subic Feet	per Second	Cubic Feet per Second, Water Year October 1997 through September 1998 Daily Mean Values	r October 1/	997 through	September	1998		, l
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0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	8	6.0									8.2	1 -	5.5
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0.9 5.0 0.9 6.0 1.7 6.0 1.7 6.0 1.7 6.0 1.7 6.0 1.3 6.0 2.0 4.7 2.0 4.7 2.1 4.7 2.2 4.3 2.3 5.3 2.3 5.6 4.0 6.0 6.0 6	5	6.0					*			5.3	8.2		4.8
0.9 1.4 1.7 1.7 1.7 1.7 1.7 1.7 1.8 2.0 2.0 2.1 2.2 2.3 2.3 4.0 5.6 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 6.0 6	9	6.0							1	5.0	8.1	1	4.9
1.4 5.5 1.7 6.0 1.7 6.0 1.7 6.0 1.7 6.0 1.7 6.0 1.8 6.0 1.9 7.4 2.0 4.7 2.0 4.3 2.1 4.9 2.2 4.9 2.3 5.3 2.3 5.3 6.9 5.6 7.8 6.5	7	6.0						i		5.3	8.8	Γ.	5.0
1.7 5.5 1.7 6.0 1.7 6.0 1.7 6.0 1.7 4.6 1.8 6.0 1.9 6.0 2.0 5.5 2.0 4.7 2.0 4.7 2.2 4.3 2.3 4.5 4.0 4.5 6.9 5.6 6.9 6.5	8	1.4								5.5	7.1	1	4.9
1.7 1.7 1.7 1.8 1.9 2.0 2.0 2.0 2.1 2.1 2.2 2.3 2.3 2.3 2.3 2.3 2.3 2.3	6	1.7								5.5	6.1		5.0
1.7 1.7 1.7 1.8 1.9 2.0 2.0 2.0 2.1 2.1 2.2 2.3 2.3 2.3 2.3 2.3 2.3 2.3	10	1.7				1000			†	0.9	6.9	waste in	5.3
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1.7 6.0 1.8 4.6 1.9 5.5 2.0 6.0 2.0 4.7 2.0 4.3 2.1 4.9 2.2 4.3 2.3 5.3 4.0 6.9 7.8 6.5	12	1.7							1	5.9	9.2	1	5.8
1.7 4.6 1.8 4.6 1.9 4.7 2.0 4.7 2.0 4.3 2.1 4.3 2.2 4.9 2.3 5.3 2.3 5.3 4.0 4.7 6.9 6.5 7.8 6.5	13	1.7								0.9	8.2	1	5.6
1.8 5.5 1.9 6.5 2.0 4.7 2.0 4.7 2.1 4.3 2.2 4.9 2.3 5.3 2.3 5.3 4.0 4.7 6.9 6.5 7.8 6.5	14	1.7						-	-	4.6	8.1	•	5.6
1.9 5.4 4.7 2.0 4.7 4.7 4.3 4.4 4.3 5.3 5.3 5.3 5.3 6.9 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	15	1.8								5.5	7.3		5.8
2.0 2.0 2.1 2.1 2.2 2.3 4.9 4.9 4.9 4.9 5.3 2.3 4.5 6.0 6.0 6.5	16	1.9								5.4	7.6		5.4
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1.9 2.0 2.1 2.1 4.9 4.9 2.3 2.3 4.9 4.0 6.9 6.9 6.5	18	2.0								4.4	8.2		9.6
2.0 2.1 2.2 2.3 1.3 0.9 4.0 6.9 6.9 6.5	19	1.9						_	-	4.7	8.5		9.
2.2 2.3 1.3 0.9 4.0 6.9 6.9 6.5	20	2.0	-					i	f	4.3	9.0		10.3
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2.3 1.3 0.9 4.0 6.9 6.9 7.8	22	2.2							-	5.3	8.8		14.9
1.3 0.9 4.0 6.9 7.8 6.5	23	2.3	W- V							1	8.7	*	13.3
6.9 6.9 7.8 6.5	24	1.3									7.7		13.1
6.9	25	6.0							1		6.6	•	13.3
6.9	26	4.0					-			4.7			13.1
7.8	27	6.9								5.6	ndr —	4.0	12.8
9	28	7.8				And the same of th			1	6.2	- ···	4.2	13.4
	29									6.5	i	4.3	14.7
	30									7.1		3.9	17.0



			Discharge. (Subic Feet	per Second	e. Cubic Feet per Second. Water Year October 1998 through September 1999	October 1	998 through	Septembe	r 1999		
						Daily Mean Values	/alues					
Day	Oct	Nov	Dec	Jan	Feb	Mar	Арг	May	Jun	luc	Aug	Sep
-	19.6					28.8				21.7	15.8	18.2
2	21.3					28.0				21.7	17.6	21.3
3	23.7			_		27.5				23.3	17.8	21.1
4	27.0					27.5				24.7	17.6	20.6
2	29.3					27.5				21.7	17.6	20.4
9	30.3					27.5				20.6	17.2	19.4
7	28.3					27.3			† !	20.0	16.6	19.2
8	26.5					27.5				19.6	16.0	19.8
o	26.5					27.8				19.2	15.6	21.7
10	25.6					28.0				19.0	14.7	21.5
11	25.4					27.8				18.8	13.1	21.1
12	25.8					27.5				18.6	12.9	20.6
13	25.6					27.3				18.4	13.8	21.3
14	25.8					27.3				18.4	13.4	20.6
15	25.8					27.3				18.6	12.9	20.6
16	25.6					27.0				18.4	13.4	20.6
17	26.3					26.8				19.2	12.4	20.6
18	26.5					26.5			28.0	19.6	12.9	20.6
19	26.3					26.3			28.8	19.4	13.4	21.3
20						26.3		,	29.5	21.3	14.7	21.7
21						26.3			27.3	21.7	16.2	21.3
22						26.8		ļ	24.2	20.6	17.0	21.3
23						26.8			22.2	19.2	17.0	21.5
24								1	21.7	18.6	16.8	21.5
25					30.3	-			21.3	18.0	16.4	20.6
26					29.5				19.8	17.6	16.0	20.0
27					29.3				22.8	17.4	15.1	19.6
28					29.3				22.2	16.0	15.6	18.0
29									21.7	15.3	15.6	18.0
30									21.3	14.5	15.3	18.2
31										13.8	15.8	



			Discharge, (Subic Feet	e, Cubic Feet per Second, Water Year October 1999 through September 2000 Daily Mean Values	I, Water Year Octob Daily Mean Values	October 19	999 through	September	. 2000		
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
-	18.4	20.9		24.7		-					3.4	
5	19.6	21.1		24.4						1	3.3	
8	19.6	21.1	25.1	24.0		_			1		3.5	
4	19.6	21.5	25.1	23.5						! !	5.0	
2	19.6	22.6	24.0	22.8		-		+			4.5	
9	19.8	23.5	21.7	23.7		1					4.2	
7	20.0	22.6	22.6	24.7				†	was a same of use	1	4.0	
00	19.8	22.4	24.0							-	3.6	
6	19.8	22.6	24.7	23.5					1		4.5	
10	20.0	22.8	24.4	24.0				1			7.6	
11	19.8	22.8	24.0	23.5				70			7.3	Ţ
12	20.0	22.8	23.3	23.3						10.9	6.8	,
13	20.0	22.8	24.4	24.4		1	10.8			10.6	6.2	
14	20.0	22.8	23.7	24.0	30.3		11.6	ļ [10.2	6.4	
15	19.8	22.8	24.0	24.7	29.5	-	12.4			10.9	6.4	
16	20.4	23.1	24.0	25.6	30.8		13.3	1		10.0	6.8	
17	20.6	23.1	22.4	25.4	31.3		15.4			9.5	9.9	
18	20.6	23.3	22.2	26.3	32.6		17.6			6.6	6.9	Ţ
19	20.6	23.5	24.0	26.5	33.4		25.1		1	9.6	8.1	
20	20.6	23.3		25.1	31.8	1	27.5			9.5	8.2	
21	20.6	23.3		25.6	31.6	1	25.1	[i	9.4	9.3	
22	20.6	23.5		26.3	31.3		25.1			9.3	9.4	
23	20.6	22.6		25.1	32.1		24.0		-	80.00		
24	20.6	21.7		25.1	32.1		22.8		<u>.</u>	8.5		1
25	20.6	25.1		24.0	31.3		20.0	+	T T	7.3	1	1
56	20.6	24.0		24.4	32.1		18.6	r r	-	5.9	1	26.3
27	20.6	24.7		26.8	34.0			1		5.4	→ 1	25.8
28	20.6	25.4		26.5			-			0.9		25.8
29	20.6	25.1		25.8			1	ļ - ·		5.9		25.8
30	20.6	25.1		26.8			İ	,		5.9	+	25.6
31	20.9		23.7	26.8						4.5		1



			Discharge, (Cubic Feet	per Second,	Cubic Feet per Second, Water Year October 2000 thr	r October 2	000 through	Discharge, Cubic Feet per Second, Water Year October 2000 through September 2001	2001		
			,			Daily Mean Values	/alues		-			
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
-	25.4			g .		-			9.0	6.5	4.1	6.8
2	25.1								9.3	6.2	4.0	6.9
ါက်	25.8								10.0	5.6	4.2	7.3
4						-		1	12.2	4.7	4.5	6.9
S					+				14.7	5.0	5.0	6.9
9						1			14.0	8.9	5.0	7.6
7							1		12.1	7.3	9.4	8.2
∞									12.1	9.9	4.7	9.3
တ									11.8		4.6	9.7
10									11.3	•	5.0	9.4
1									10.9		5.6	9.3
12									10.5		2.6	9.3
13									10.5	14.9	2.0	9.5
14									10.3	12.6	5.5	10.2
15								13.6	10.2	11.1	5.6	11.1
16								13.3	9.7	9.7	5.6	11.1
17				_				9.7	9.5	9.0	5.6	11.6
100							1	8.5	9.4	8.5	5.8	12.1
19								8.5	9.0	7.8	5.6	14.2
20								10.3	7.6	7.1	5.5	12.2
21								11.4	9.9	5.6	5.4	10.5
22	- 1							10.5	6.9	2.0	5.6	10.0
23								10.0	6.9	4.6	5.9	9.9
24								10.9	7.4	4.5	6.2	8.7
25								10.5	6.2	4.3	6.2	8.0
26								0.6	5.6	4.5	5.8	7.6
27	-							9.0	6.2	5.0	5.4	7.6
28								9.4	8.2	4.7	5.0	7.6
29		_						8.7	9.0	4.5	2.0	7.8
30								9.7	7.3	4.0	4.7	8.4
31.				_				9.4		43	5.6	



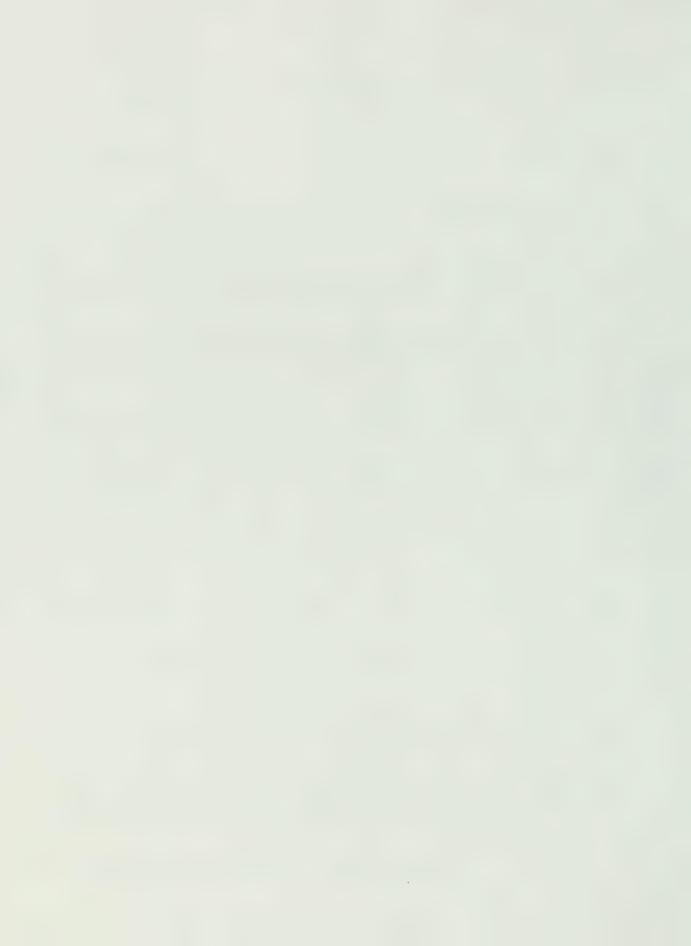
			Discharge, C	Cubic Feet per Second. Water Year October 2001 through September 2002	per Second	. Water Yea	r October 20	301 through	September	- 2002		
1		0.6.17				Daily Mean Values	/alues					1
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	8.2	13.8	17.20	14.3	15.3	13.8		10.9			1.3	6.2
2	8.2	13.8		15.1	14.7	13.8	21.5	10.5	7.6		1.1	6.2
3	8.7	13.8		14.5	14.7	13.8	21.7	9.4	0.6		1.3	5.9
4	10.2	13.8	17.8	14.7	14.9	14.0	23.1	10.5	10.5	4.7	6.0	5.0
5	10.9	13.8	17.6		14.9	14.5	22.8	7.8	11.1	4.7	1.3	5.5
9	10.9	13.8	16.4		15.3	15.3	22.6	7.6	10.0	4.6	1.7	5.0
7	10.8	13.8	18.0		15.3	16.6	21.3	7.0	9.4	4.7	2.5	4.5
ω	10.9	14.7	15.3	13.6	15.1	17.6	20.6	7.1	8.7	4.9	2.1	5.0
6	11.1	14.9	15.6	15.3	14.7		20.0	9.9	8.2	3.6	2.2	6.2
10	11.4	14.7	17.6	15.6	14.3		20.2	6.0	7.8	2.0	1.9	9.9
17	11.6	14.7	16.6	15.6			20.2	7.6	7.4	1.5	2.5	6.4
12	11.6	14.7	14.2	15.1	15.4	19.0		8.7	7.3	2.3	3.0	9.0
13	11.6	14.9	15.6	14.9	15.1	18.6		8.5	6.9	2.6	4.0	9.7
4	12.2	15.1	15.3	14.7	15.3	22.4		8.4	6.9	2.7	4.5	10.8
15	13.1	15.1	16.0	14.7	15.8	24.4		8.5	6.8	2.7	4.5	9.0
16	13.8	15.1	15.8	14.3	15.8	24.0		8.1	9.9	1.9	3.0	8.2
17	13.3	15.1	16.0	14.2	16.0			7.8	9.9	1.4	2.1	7.4
18	12.9	15.1	16.2	14.2	16.2		14.5	9.7	0.0	0.0	2.5	7.1
19	12.9	14.5	16.0	14.2	14.5	16.6	14.3	7.1	6.2	-	1.9	7.0
20	12.9	15.6	16.4	14.2	14.9	18.4	14.2	7.0	6.2	4.1	2.1	6.9
21	12.9	15.3	16.4	13.8	15.3	17.0	14.5	7.1	5.5	2.8	3.0	9.9
22	12.9	14.3	16.4	14.2	16.0	15.6	14.7	8.5	5.3	3.7	2.5	5.4
23	12.8	15.4	16.4	14.7	15.8	16.8	14.5	7.1	3.5	3.3	2.5	4.8
24	12.8	15.4	16.0	14.7	15.8	16.2	14.2	7.3	4.7	3.7	4.5	4.2
25	12.9	13.8	15.3	14.7	13.8	16.6	12.1	7.3	4.2	3.4	5.6	4.4
26	12.9	15.4	14.3	15.1	13.8	18.2	9.7	6.9	4.3	3.6	6.2	4.7
27	13.6	15.4	14.5	15.3	13.8	17.6	9.7	7.0	3.6	3.6	5.0	5.0
28	14.0	13.8	14.5	15.3	13.8	21.1	10.2		3.4	3.5	9.9	4.7
29	13.8		14.5			21.3	10.5		3.6	3.2	7.0	4.8
30	13.8	16.8				20.9	10.6		3.4	3.2	9.9	4.0
31	13.8		14.5			20.6				25	7 3	



			Discharge, Cubic Feet per Second, Water Year October 2002 through September 2003	Cubic Feet per Second, Water Year October 2002 thr	per Second.	Water Yea	r October 2	302 through	September	- 2003		
						Daily Mean Values	/alues]
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	4.0	10.9		12.1		14.7		11.3	6.8	5.3		5.2
2	,	10.5		12.1		15.6		11.3	7.8	4.6	1	4.6
3		10.5		12.2			17.6	10.6	7.7	4.3	1	4.2
4	4.5	10.8		12.6			17.6	10.3	8.2	5.0	1 P	5.0
5		11.1		12.9			18.2	10.6	8.1	5.4	†	5.0
9		10.8					18.6	10.8	8.2	5.4		
7		10.8					18.6	10.5	9.3	5.5	Ť	1
8		10.8			Common programmy	war weighted manager or manager	19.2	12.4	10.0	5.2	r r	
0	4.5	10.8					19.4	12.8	10.0	5.0	<u>+</u> 	
10	4.0	10.8					18.6	12.2	0.3	4.9	1	
17		10.6					17.6	12.1	9.0	4.6	Ţ	15.3
12		10.5				18.2	17.2	13.8	8.7	4.9	t 1	11.3
13	4.5	10.5			_	18.6	16.6	14.2	8.5	4.5	1	8.5
14		10.5			15.6	18.6	16.0	13.6	8.5	4.3	,	7.8
15		10.5			16.0	18.6	14.7	12.9	8.4	4.1		7.7
16	4.5				16.0	18.4	14.2	12.4	7.8	3.7	1	7.6
17					15.8	18.6	13.8	11.4	7.6	3.9	1	7.4
18	year		13.6		15.4	20.6	13.6	11.8	8.0	3.7	Γ.	7.7
19	4.6		10.8		15.4	21.1	13.3	11.3	8.1	4.3	T	7.8
20			10.8		15.4	19.6	13.1	11.3	8.0	4.0	† -	7.8
21	6.4		12.1		15.4	19.4	13.1	10.9	7.6	3.4	Γ	7.6
22	2.0		12.6		15.3	18.6	15.3	10.3	7.8	3.0		7.3
23.	5.3		11.3		-	17.6		10.2	8.2	3.6		7.0
24	5.5		10.0			17.6	16.0	10.2	7.1	2.8	Ť	6.9
25	5.8		10.2			17.2	14.7	10.6	8.9	3.0	4.0	7.0
26	5.6		10.3		1	17.0	12.4	9.7	6.1		3.9	8.0
27	5.8		10.5			18.6	11.1	7.6	5.6		3.6	7.8
28	5.9		10.6			18.6	10.6	6.9	5.4	1	3.3	7.3
29	0.9		11.6			17.6	10.2	6.9	5.5	-	3.3	7.0
30	5.6		11.6			18.6	10.3	6.5	5.6	1	4.5	7.1
31.	9.7		11.9					6.5			5.0	



				71			14/-4 1/-		17 000		4000		
				Discharge, C	ubic reet	er second	Daily Mean Values	Values	003 through	Discharge, Cubic Feet per Second, water Year October 2003 through September 2004	2004		
Day	- ← ;	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
		7.8	7.4							7.30		= }	
1	2	8.1	8.5							-		1	
	m	8.0											
	4	7.7											1
	2	7.6										+	
	9	9.7							-			1	
	7	9.7								1 -		†	
	80	9.7										 	
	6	9.7									,		
	10	7.6							-	6.9		1	
	7	7.6								9.9	}	7 -	
	12	7.7							7.1	6.2	1	1	
	13	7.7							7.6	5.9		+	
	14	7.8							7.6	5.6		, T	
	15	8.0							7.3	4.5	+	1	
	16	8.1							7.3	4.5	1	1 -	
	17	8.1							7.3	5.0	1	+	
	18	8.1							4.8	5.0			1
	19	8.1							9.3	5.6	1	1	
	20	8.1						1	8.2	6.2		1	
	21	8.1							7.8		-	t ·	
	22	8.1							8.2		; -	4 -	
	23	8.1							8.7			1	
	24	8.1						1	8.8	:	1		
	25	8.4							8.1	-			
	26	8.5							7.0	1		,	
	27	8.5							6.9	1			
	28	8.2							6.9	-		-	
	29	5.6							6.9				
	30	5.3							6.8				,
	31	න. ව							6.6]	

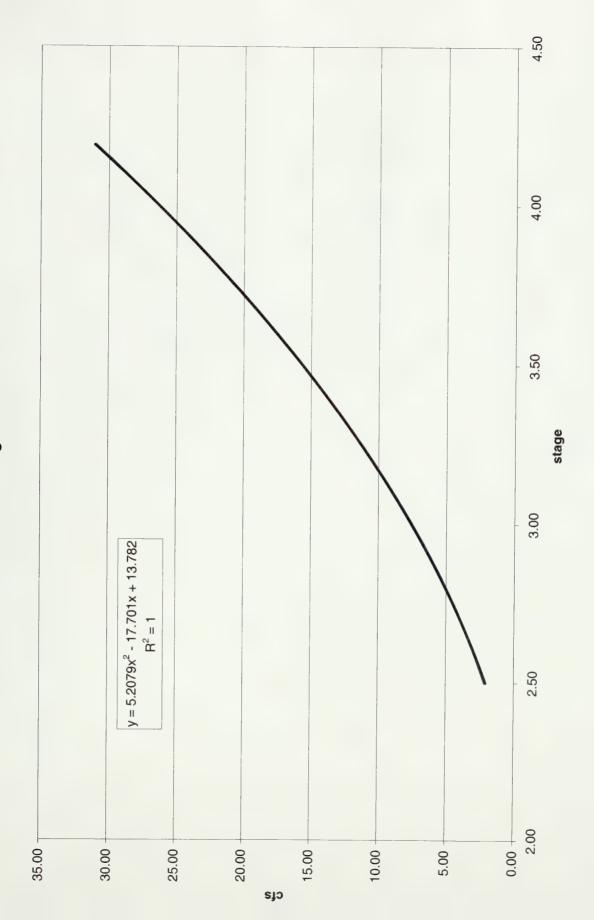


Rating Table and Rating Curves

0 0	12	O Z	El El								
Log No: 8	00) 	IFF I	839 939	1.192	.30	-73	.83 .03 .13 .24	.32	.80 .89 .98 .07	.34	. 69 . 69 . 85 . 85 . 95 . 03
,	_	6	0.8	6.093	78 . 30	3.6	4 6 4 6 7 7 7	0 80 6 9	0.0 4.0 6.7	W 1100	0.00.00.00.00.00.00.00.00.00.00.00.00.0
H 2 TYPE:	EEN CHE		. 81	5.969	. 64 1. 44 . 75	4.0	4 40 4 6 6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8 47 0	0.4.0	7.007
42 BY DEHITCH DD: 2	DEFINED BET DATE	PRECISION)	3.648	4.690 5.847 7.117	9.49	70	0.00.00.00.00.00.00.00.00.00.00.00.00.0	0.40.00	. H44.00	0.70	1.1
1994 @ 14:	MELL BY	(EXPANDED PF	. 55	4.581 5.727 6.985	9.835	7.0	77.80%	L0038	14100	7.00.7	8 7 8 7 9 0
SED: 11-23	AND IS COMP	. 05	. 45	5.607 6.855	8.213 9.680 11.25	4.7	16.60 18.58 20.67 22.85 13	27.50 29.97 32.54 35.20	77.00	2777	4 10000
DATE PROCESSED: 11-23-	AND	PER SECOND	2.471 3.358	.48	8.072 9.528 11.09	4.5	16.40 18.38 20.45 22.63	22 25 26 28 29 3 28 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	40.51 46.43 46.45 72.75	04040	7.7.7.0
No.) so	CUBIC FEET	3.264	5.00	7.933 9.378 10.93 12.59	4.3	11.02.24.02.24.04.04.06.06.00.00.00.00.00.00.00.00.00.00.00.	72.02 20.42 74.02 74.02 76.02 86.02	40.22 43.14 46.14 52.24 52.43	55.71 59.07 62.52 66.06	
	MEASUREMENTS, NOS	DISCHARGE IN	2.308 3.171 4.154	.46	7.794 9.228 10.77 12.42	4.1	16.02 17.98 20.03 22.18	26.78 29.22 31.76 34.39	39.93 42.84 48.84 52.93	55.37 58.73 62.18 65.71 69.33	73.03 76.82 80.70 84.66 88.70
NEBR.	SCHARGE MEAS	.01	2.228 3.079 4.051	.34	7.656 9.080 10.61	o. س	15.83 17.78 19.82 21.96 24.20	26.54 28.97 31.50 34.12 36.84	23.0.65 445.54 55.53 7.0.65 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.0	555.04 61.83 68.35 68.35	72.66 76.44 80.31 84.26 88.29
IVER AT AGATE,	DISCH	00.	2.150*	. 21	.520 10.45	00 m	15.64 17.58 119.51 23.74 23.98	26.30 28.73 31.24 36.56	39.36 42.25 48.33 51.46	20.00000000000000000000000000000000000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
NIUBHARA RI OFFSET: 2.0	BASED ON	GAGE HEIGHT (FEET)	2.50	2.90	00000	વા	00000 00000	00 - 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 4 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5.00 5.10 5.20 5.30	6.00 6.00 6.00



Niobrara River at Agate Nebraska



Niobrara River at Agate, Nebraska USGS Station 06454100

